

**REMARKS**

**I. Introduction**

In response to the pending Office Action, Applicants have added new claim 26. In addition, claim 15 was amended to correct an inadvertent error. Support for new claim 26 may be found, for example, on page 88, lines 11-14 of the specification. No new matter is added in this amendment.

Applicants appreciate the indication of allowable subject matter set forth in claims 24 and 25.

A Request for Continued Examination (RCE) is being filed concurrently with this Response.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art.

**II. The Rejection Of Claims 1, 4-13 And 15-23 Under 35 U.S.C. § 103**

Claims 1, 4-13 and 15-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hasegawa et al. (USP No. 6,778,355) in view of Yamamoto et al. (USP No. 6,503,858). Applicants respectfully traverse this rejection of the pending claims for at least the following reasons.

With regard to the present invention, amended claims 1 and 4 both recite a Bismuth glass composition containing rare earth element oxides of Group C which is at least one selected from the group consisting of Sc<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, La<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, Pr<sub>2</sub>O<sub>3</sub>, Nd<sub>2</sub>O<sub>3</sub>, Sm<sub>2</sub>O<sub>3</sub>, Eu<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Tb<sub>2</sub>O<sub>3</sub>, Dy<sub>2</sub>O<sub>3</sub>, Ho<sub>2</sub>O<sub>3</sub>, Er<sub>2</sub>O<sub>3</sub>, Tm<sub>2</sub>O<sub>3</sub>, Yb<sub>2</sub>O<sub>3</sub> and Lu<sub>2</sub>O<sub>3</sub>.

It has long been established that the language of 35 U.S.C. § 103(a) contains the fundamental statement that “a person shall be entitled to a patent unless” certain criteria are met. Criteria for a finding of obvious under 35 U.S.C. § 103 requires that if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Accordingly, unless there is clear proof that claims are obvious, an Applicant is entitled to a patent under the United States Patent Code.

As is well known in patent law, obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006).

Furthermore, the mere fact that references can be combined or modified does **not** render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 82 USPQ2d 1385, 1396 (2007).

Moreover, a statement that modifications of the prior art to meet the claimed invention would have been “well within the ordinary skill of the art at the time the claimed invention was made” because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

With regard to the present application, it has been alleged that Hasegawa teaches the bismuth glass composition of claims 1 and 4 except that Hasegawa fails to disclose a bismuth

glass composition having an oxide of Group C in an amount from 0.1 to 10 wt%. However, it is alleged that the lead glass composition of Yamamoto, which contains an oxide of Group C ( $\text{Ln}_2\text{O}_3$ ) in an amount within the range of claims 1 and 4, in combination with Hasegawa, renders claims 1 and 4 obvious.

However, as is set forth above, a mere finding that all aspects of the claimed invention were individually known in the art is not sufficient to establish a finding of obviousness. Rather, the patent law requires that the cited references contain a teaching, suggestion or some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. Applicants respectfully submit that the Examiner has failed to meet this burden.

As is disclosed in the Abstract and in col. 3, lines 3-10, Yamamoto discloses a glass whose main component is lead (Pb). In contrast, the main component of the glass composition of Hasegawa is bismuth (Bi). In fact, Hasegawa fails to utilize any Pb in its glass compositions. In addition, Yamamoto is completely silent with respect to the use of Bi in its glass compositions. Furthermore, there is no suggestion or teaching that Pb-based and Bi-based glass compositions have such similar properties that an additive to one may be readily incorporated into the other. As such, the proposed combination has no support in either cited prior art reference and accordingly, the combination of Hasegawa and Yamamoto is not readily obvious to one skilled in the art.

To support the combination of Hasegawa and Yamamoto, the Examiner makes the conclusory statement that “it would have been obvious to one of ordinary skill in the art at the time of the invention to further included [sic] the Ln oxide in the composition of Hasegawa et al, because Yamamoto et al teach such an inclusion improves flowability, deaeration and mechanical strength of the glass composition.”

However, Yamamoto teaches the addition of Ln oxide to a Pb-based glass composition, not a Bi-based composition. Moreover, as stated above, both references are silent towards the use of the main component of the other reference. As the Examiner has not provided any support that suggests that the lanthanide oxides disclosed in the Pb-glass compositions of Yamamoto could be combined with the Bi-glass compositions of Hasegawa, the Examiner has failed to meet the burden of showing the necessary teaching, suggestion or some articulated reasoning with some rational underpinning to support the proposed combination. As such, it is clear that the proposed combination is improper.

Moreover, Hasegawa teaches in col. 2, lines 56-60 that “the conventionally used glasses having a low softening point including lead glasses are not sufficient, especially in terms of water resistance, to be used for the recent electronic equipment and various parts...” Thus, in addition to not disclosing lead, Hasegawa, in fact, teaches away from the use of lead in the glass compositions disclosed therein. In contrast, Yamamoto discloses that when the lead content of the glass composition is less than 44% by weight, vitrification occurs with difficulty (col. 7, lines 27-28 of Yamamoto). Thus, Yamamoto and Hasegawa are mutually exclusive in terms of the main component of their respective glass compositions. As the glass composition of Hasegawa contains no lead, one skilled in the art would not conclude that the bismuth glass composition of Hasegawa could be used with the lanthanide oxide compounds disclosed in the lead glass compositions of Yamamoto. Furthermore, the Examiner has shown no evidence to the contrary.

In addition, the glass composition of Yamamoto is in a heterogeneous state in which crystalline particles of a rare earth element oxide are dispersed in a matrix. As a result, in a glass composition of Yamamoto that is composed mainly of PbO, the addition of the rare earth element improves mechanical strength, but also causes the composition to suffer an increased

risk of crack formation. As such, one skilled in the art would not be motivated to the use of the elements of Yamamoto in the composition of Hasegawa.

As such, it is clear that that the combination of Yamamoto and Hasegawa is improper and accordingly, Applicants respectfully request that the § 103 rejection of claims 1 and 4 be withdrawn.

Furthermore, new claims 26 recites that the bismuth glass composition has a thermal expansion coefficient of  $60 \times 10^{-7}/^{\circ}\text{C}$  to  $80 \times 10^{-7}/^{\circ}\text{C}$ . As is discussed on page 88, lines 14-17, in order to reduce the stress and warpage so as not to cause damage to a PDP, the thermal expansion coefficient of a sealing member 16 is from  $60 \times 10^{-7}/^{\circ}\text{C}$  to  $80 \times 10^{-7}/^{\circ}\text{C}$ . This is done because at the point where the sealing between the glass panel of the front and rear plate is attempted, stress warpage occurs due to a difference in thermal expansion after the sealing.

**III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1 and 4 are patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

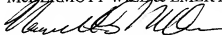
**IV. Conclusion**

Having responded to all open issues set forth in the Office Action, it is respectfully submitted that all claims are in condition for allowance.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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